ABSTRACT

The Harbor Community Monitoring Study (HCMS) was conducted to characterize the spatial variations in concentrations of toxic air contaminants (TACs) and their co-pollutants within the communities of Wilmington, West Long Beach, and San Pedro in California's South Coast Air Basin (SoCAB). Saturation monitoring consisting of 7-day time-integrated sampling at 23 locations was conducted as part of the HCMS by the Desert Research Institute. Samples were collected for four consecutive weeks in four seasons during 2007. Measurements at twenty sites included oxides of nitrogen (NOx) and sulfur dioxide (SO_2) using Ogawa passive samplers, and benzene, toluene, ethylbenzene, and xylenes (BTEX), formaldehyde and acetaldehyde using Radiello passive diffusive samplers. Additionally, 7-day integrated Teflon and quartz filters were collected with portable mini-volume samplers and analyzed for $PM_{2.5}$ mass and organic carbon (OC) and elemental carbon (EC). Nitrogen dioxide (NO_2) and hydrogen sulfide (H_2S) were also measured at three of the sites using Ogawa and Radiello passive samplers, respectively, and full sets of passive measurements (including NO_2 but not H_2S) were made at three additional near-roadway locations. Diesel particulate matter (DPM) concentrations were estimated at each site from the EC concentrations times the slope of the correlation between total carbon and EC at the near road sampling locations. The annual average DPM concentrations were higher near diesel truck traffic but were comparable to the MATES-III fixed monitoring sites at sampling locations 300m or more from traffic. Results are qualitatively consistent with the ARB's modeling estimates of DPM concentrations. Higher average SO_2 levels were measured at the east boundary of a refinery and in the port area, but corresponding increases in BTEX were not observed near the refinery. Results from the HCMS are compared to similar data for other areas of the South Coast Air Basin using data from the Third Multiple Air Toxics Evaluation Study (MATES-III). Average BTEX levels in the Harbor Communities were generally comparable or less than at other air monitoring locations in the basin. Formaldehyde and other carbonyl compounds that are formed in the atmosphere were lower in the Harbor Communities than inland areas of the basin. Week-to-week variations were higher than site-to-site variability in concentrations of most pollutants.